

## **CLAIMS**

## **WHAT IS CLAIMED IS:**

1. An apparatus for correcting image data detected by an image sensor composed of a plurality of sensing elements, comprising:  
an operation memory for storing expansion coefficient array data and basis function array data, said expansion coefficient array data and said basis function array data respectively including data of expansion coefficients and function values of a basis function for orthogonal expansion of a high order polynomial for correcting the image data; and  
an operation part for correcting the image data using the expansion coefficient array data and the basis function array data.
2. The apparatus according to claim 1, comprising more than one operation memory and operation part.
3. The apparatus according to claim 1, wherein said expansion coefficient array data includes the expansion coefficients for each of the sensing elements.
4. The apparatus according to claim 2, wherein said expansion coefficient array data includes the expansion coefficients for each of the sensing elements.
5. The apparatus according to claim 1, wherein said basis function array data includes the basis function values for each of pixel values which the image data may take.
6. The apparatus according to claim 4, wherein said basis function array data includes the basis function values for each of pixel values which the image data may take.

1           7. The apparatus according to claim 1, wherein said basis function is a  
2        Chebyshev function.

1           8. The apparatus according to claim 6, wherein said basis function is a  
2        Chebyshev function.

1           9. The apparatus according to claim 7, wherein said Chebyshev function is a  
2        quadratic to quartic Chebyshev function.

10           10. The apparatus according to claim 1 wherein said high order polynomial is an  
11        equation obtained by approximation of a look-up table (LUT) conversion.

12           11. The apparatus according to claim 9 wherein said high order polynomial is an  
13        equation obtained by approximation of a look-up table (LUT) conversion

14           12. The apparatus according to claim 1, wherein said operation part is an  
15        arithmetic circuit of a digital signal processor (DSP) and said operation memory is an  
16        internal memory of said DSP.

17           13. The apparatus according to claim 11, wherein said operation part is an  
18        arithmetic circuit of a digital signal processor (DSP) and said operation memory is an  
19        internal memory of said DSP.

1           14. A method for correcting image data detected by an image sensor  
2           composed of a plurality of sensing elements, comprising the steps of:  
3            storing expansion coefficient array data and basis function array  
4            data in an operation memory, said expansion coefficient array data and basis  
5            function array data respectively including data of expansion coefficients and function  
6            values of a basis function for orthogonal expansion of a high order polynomial for  
7            correcting the image data;  
8            reading said expansion coefficients and basis function values from said operation  
9            memory; and  
10           performing arithmetic operations on said image data with said read  
11           expansion coefficients and basis function values to correct the image data.

1           15. The method according to claim 14, wherein said expansion coefficient array  
2           data includes the expansion coefficients for each of the sensing elements, and in said  
3           reading step, the expansion coefficients corresponding to a sensing element detecting  
4           image data to be corrected are read for correction of the image data.

1           16. The method according to claim 15 wherein said basis function array data  
2           includes the basis function values for each of pixel values which the image data may  
3           take, and in said reading step, the basis function values corresponding to a pixel value  
4           of image data to be corrected are read for correction of the image data.

1           17. The method according to claim 14 wherein said basis function is a Chebyshev  
2           function.

1           18. The method according to claim 16 wherein said basis function is a Chebyshev  
2           function.